

Notes - Finding Vertex of a Quadratic

Quadratic Function - X^2 as highest power

Standard Form
 $f(x) = ax^2 + bx + c$

Vertex Form
 $f(x) = a(x-h)^2 + k$

Vertex - The Maximum or Minimum value of quadratic
 \swarrow a is neg \searrow \swarrow a is pos

Axis of Symmetry - Line that goes through vertex and cuts the parabola into 2 symmetric halves ($x =$)



To Find Vertex

1. From vertex form: Vertex (h, k) AoS: $x =$

Ex: $f(x) = 3(x-7)^2 + 1$

$(7, 1)$, Min

AoS: $x = 7$

$f(x) = (x + \frac{1}{5})^2 + \frac{2}{3}$

$(-\frac{1}{5}, \frac{2}{3})$, Min

AoS: $x = -\frac{1}{5}$

2. From standard form

$x = \frac{-b}{2a}$

, plug back in to find y $(\frac{-b}{2a}, f(\frac{-b}{2a}))$

Ex: $f(x) = 2x^2 - 8x + 1$ $a = 2$ $b = -8$ $c = 1$

$x = \frac{-(-8)}{2(2)} = \frac{8}{4} = 2$ $f(2) = 2(2)^2 - 8(2) + 1$
 $= 8 - 16 + 1 = -7$

$(2, -7)$, Min AoS $x = 2$

3. On Graphing Calc (from either farr)

1. Put equation in $Y=$
2. Make sure that you can see the vertex in your window
3. $\boxed{2^{nd}}$ $\boxed{\text{Trace}}$. Choose 3: Min
4: Max
4. Put blink left of vertex. $\boxed{\text{Enter}}$
5. Put blink right of vertex. $\boxed{\text{Enter}}$ $\boxed{\text{Enter}}$